APPENDIX 10.A — FORMS

Design Procedure Form

Engineer _____ Project _____

City/County _____ Description _____

Maps:

USGS Quad Scale Date

Flood Insurance Firm & FHBM

Local Land Use

Soils Map

Geologic Maps

Aerial Photos Scale Date

STUDIES BY EXTERNAL AGENCIES:

USACE Floodplain Inform. Report

NRCS Watershed Studies PFP-HYDRO

Local Watershed Management

USGS Gages & Studies

Interim Floodplain Studies

Water Resources Data

Regional Planning Data

Forestry Services

Utilty Company Plans

FEMA Flood Insurance Studies

STUDIES BY INTERNAL SOURCES:

Quarterly Reports

Hydraulics Sect. Records

District Drainage Records

Flood Record (Highwater, Newspaper)

Bridge Inspection Reports

CALIBRATION OF HIGH-WATER DATA:

Discharge and Frequency of H.W. el.

Influences Responsible for H.W. el.

Analyze Hydraulic Performance of Facility for Min. Flow through 50-Yr

Analyze Hydraulic Performance of Proposed Facility for Min. Flow through 50-Yr

Concept Report

DESIGN APPURTENANCES:

Dissipators, Riprap

Scour Analysis/Evaluation

Erosion & Sediment Control

Fish & Wildlife Protection

DISCHARGE CALCUATIONS:

Drainage Areas

Formula

HEC 1/TR-20

NRCS

Gaging Data Regional Analysis

Regression Equations

Area-Discharge Curves

Log-Pearson Type III Gage Rating

HIGH-WATER ELEVATIONS:

UDOT Survey

External Sources

Personal Reconnaissance

FLOOD HISTORY:

External Sources

Personal Reconnaissance

Maintenance Records

DATA REPORTS:

UDOT Data

Other UDOT Data

ENVIRONMENTAL REPORTS:

Utah Department of Environmental Quality

Surface Water Environment Study

Surface Water Environment Revisions

Reconnaissance Report

Design Study Report

Drainage Survey Inspection Report

Drainage Survey Inspection Report Revisions

Hydraulic Design Report

Hydraulic Design Report Revisions

Construction Report

Construction Report Revisions

Hydraulic Operation Report

Hydraulic Operation Report Revisions

TECHNIAL AIDS:

UDOT *Drainage Manual*

UDOT & FHWA Directives

Technical Library

COMPUTER PROGRAMS:

HY8, CDS

Direct Step Water Surface Profile

USACE HEC 2 Water Surface Profile

FHWA Bridge Backwater

Log-Pearson Type III Analysis

WSPRO Water Surface Profile

PFP-HYDRA

FESWMS

HEC 1/TR 20

USACE HEC-RAS River Analysis System

BRI-STARS

Compiled by: _____ Scheme No. _____

Date _____

Preliminary Risk Assessment Checklist
(Predicated on Engineering Judgment based on Survey and Plans)

Check Off

1. Potential risk to human life due to flood pool upstream and/or "Dam Break – Flood Wave" downstream _____

2. Damage to adjacent property by changes in hydraulic characteristics _____

3. Damage to highway facility _____ _____

   _____

   _____

   _____

4. Traffic Service

   AADT _____ Detours Available _____ _____

   Describe detour (i.e., Rte... to Rte... to Rte..., Length... mi) _____

   _____

   _____

   _____

5. Floodplain Management Criteria _____
   Specify: _____

   _____

   _____

   _____

6. Floodplain Impacts _____ _____

_____

_____

_____

7. Other Pertinent Factors _____ _____

_____

_____

_____

UDOT Risk Assessment For Final Design

LOCATION

County _____ Civil Twp._____ Sec. _____ Twp. _____ Range _____
Over (River, Cr., Dr. Ditch)_____ Road No. _____
Project No. _____ Design Number _____ FHWA No. _____
Assessment Prepared by _____ Date _____

1. HYDROLOGIC EVALUATION

A. Nearest Gaging Station on this stream _____ (None _____) _____
_____

B. Are flood studies available on this stream? _____

C. Flood Data:

Q_{10} _____ ft^3/s, Est. Bkwtr. _____ ft Q_{25} ft^3/s, Est. Bkwtr. _____ ft

Q_{50} _____ ft^3/s, Est. Bkwtr. _____ ft Q_{l00} ft^3/s, Est. Bkwtr. _____ ft

Q_{500} _____ ft^3/s, or Overtopping _____ ft^3/s Est. Bkwtr. _____ ft

Drainage Area _____ Method Used to compute Q _____

D. Does the crossing require outside Agency approval? Yes _____ No _____
List Agencies:
_____

2. PROPERTY-RELATED EVALUATIONS

A. Damage potential: Low _____ Moderate _____ High _____
List buildings in floodplain _____ Location _____
Floor Elevation _____
Upstream Land Use _____
Anticipate Any Change? _____

B. Any flood zoning? (FIA Studies, etc.) Yes _____ No _____
Type of Study _____
Base flood elevation _____ (100 yr)
Regulatory floodway width _____ (As noted in FIA studies)

Comments: _____
_____
_____

3. ENVIRONMENTAL CONSIDERATIONS

A. List commitments in Environmental Documents that affect Hydraulic Design (None _____)
_____
_____
_____
_____

4. HIGHWAY AND BRIDGE (CULVERT) RELATED EVALUATIONS

A. Note any outside features that might affect Stage, Discharge or Frequency.
Levees _____ Aggradation/Degradation _____ Reservoirs _____ Diversions _____
Explanation _____

B. Roadway Overflow Section (None_____) Length _____ Elev. _____
Embankment: Soil Type _____ Type Slope Cover _____

Comments: _____

5. MISCELLANEOUS COMMENTS

A. Is there unusual scour potential? Yes _____ No _____ Protection Needed? _____

B. Are banks stable? _____ Protection Needed? _____

C. Are spur dikes needed? Yes _____ No _____

D. Does stream carry appreciable amount of ice? _____ Elev. of high ice _____

E. Does stream carry appreciable amount of large driftwood? _____

Comments: _____

6. TRAFFIC-RELATED EVALUATIONS

A. Present Year _____ Traffic Count _____VPD % Trucks _____

B. Design Year _____ Traffic Count _____ VPD % Trucks _____

C. Emergency Route _____ School Bus Route _____ Mail Route _____

D. Detour Available? _____ Length of Detour _____ mi

Comments: _____

7. PRESENT FACILITY

A. Low Roadway Elevation: _____

B. Bridge Hydraulic Capacity at point of overtopping _____ ft^3/s
_____ Frequency (if less than Q_{500})

C. Is flash flooding likely? Yes _____ No _____

Comments: _____

8. ALTERNATIVES

A. Recommended Design _____
Low Superstructure (Bridge) _____ Top Opening (Culvert) _____
Low Roadway Grade _____

B. Were other hydraulic alternatives considered? Yes _____ No _____
Discussion: _____
_____
_____
_____
_____

C. Is this assessment commensurate with the risks identified (Yes _____ No _____)
or is further analysis needed? (Yes _____ No _____)

Comments: _____
_____
_____